

ABSTRACT OF THE DISCLOSURE

A solid-state vacuum device (SSVD) and method for making the same. In one embodiment, the SSVD forms a triode device comprising a substrate having a cavity formed therein. The SSVD further comprises cathode positioned near the opening of the cavity, wherein the cathode spans over the cavity in the form of a bridge that creates an air gap between the cathode and substrate. In addition, the SSVD further comprises an anode and a grid that is positioned between the anode and cathode. Upon applying heat to the cathode, electrons are released from the cathode, passed through the grid, and received by the anode. In response to receiving the electrons, the anode produces a current. The current received by the anode is controlled by a voltage applied to the grid. Other embodiments of the present invention provide diode, tetrode, pentode, and other higher order device configurations.